Community College Survey of Student Engagement (CCSSE) Cross-Campus Comparison Report – Spring 2014

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1   INTRODUCTION

Earlier this year, Florida SouthWestern State College's (FSW) Academic Assessment team released a report on the comparison of the Community College Survey of Student Engagement and the Community College Faculty Survey of Student Engagement (van Gaalen, 2014). In that report, 33 common survey questions spanning four topically defined categories, Course Assignments, Class Behavior, Learning Techniques, Academic Support, and Retention, were analyzed. This follow-up report focuses on student engagement survey responses (CCSSE) by campus, as faculty sample size is insufficient to characterize across all campuses/centers. Each of the questions encompasses in the initial report are herein compared across the three campuses of Charlotte, Collier, and Thomas Edison (Lee), and the one center (Hendry/Glades).

The complete reports for CCSSE and CCFSSE are included as appendices in the initial CCSSE/CCFSSE Comparison report. For additional detail of specific questions or further analysis not provided in this report, please contact Dr. Joseph van Gaalen, Coordinator of Academic Assessment, Academic Affairs (joseph.vangaalen@fsw.edu; x6965).

2   STATISTICS

In Spring 2014, entry level courses were randomly sampled to participate in the survey accounting for 7.1% of all course sections offered during the semester. In all, 86 sections across the three campuses and one center of FSW (Charlotte, Collier, Thomas Edison {Lee}, Hendry-Glades center) were administered the CCSSE and CCFSSE surveys. The distribution of those sections across campuses and center are listed below:

- ❖ Charlotte: 14
- ❖ Collier: 23
- ❖ Hendry/Glades: 5
- ❖ Thomas Edison (Lee): 44

The difference in means across campuses and center of the survey questions was analyzed. The differences were tested for significance using a one-way analysis of variance (one-way ANOVA) according to standard methods (Howell, 2009). The data are interval-level measurements (i.e. Likert-type ratings) and are therefore categorical and ordinal in nature (Sullivan, 2014). As such, typically a review of the median or mode is more satisfactory for interpreting the most common feeling in survey response as opposed to a standard parametric approach (Jamieson, 2004). However, a review of the means yields information relating to the standard deviation, and indirectly, the skewness and kurtosis of the data (Siegel, 1956). Therefore, a study of means is valuable as the goal is to study distribution patterns among the cohort as opposed to reviewing the most common feeling among respondents.

Moreover, the results are not intended to be interpreted using the Likert-type rating definitions (e.g. very effective, effective, etc.), but instead are designed to evaluate shifts in the collective survey responses. For conversion to a parametric analysis, the Likert-type ratings were interpolated to integer form (Table 1).

Question Code	0	1	2	3	4	5	6	7
CLPRESEN REWROPAP INTEGRAT CLUNPREP INTERNET FACIDEAS FACFEED WORKHARD SKIPCLAS	Don't know	Never	Sometimes	Often	Very often			
EXAMS		Extremely Easy	>>> Sliding Scale >>>					Extremely Challenging
GNGENLED GNDIVERS GNWORK CARGOAL GAINCAR	None	Very little	Some	Quite a bit	Very much			
PAYWORK	None	1 to 5	6 to 10	11 to 20	21 to 30	More than 30		
ENVCOMP ANALYZE SYNTHESZ EVALUATE APPLYING PERFORM ENVSCHOL ENVSUPRT		Very little	Some	Quite a bit	Very much			
ENVFAC		Unavailable, unhelpful	>>> Sliding Scale >>>					Available, helpful
IMPACAD IMPCACOU IMPJOBPL		Not at all	Somewhat	Very				
WRKFULL CAREDEP ACADUNP		Not likely	Somewhat likely	Likely	Very likely			

Table 1. Likert-type rating interpolated to integer rating for parametric analysis.

The one-way ANOVA results of the difference in means of the survey question indicate that of the 33 questions analyzed, eight questions spanning four of the five topics as defined in van Gaalen (2014) were statistically significant. Compiled significance test results are presented in Table 2. As ANOVA significance do not determine which means are statistically significantly, and, since unequal samples sizes can affect the accuracy of significance tests (Glass, et al., 1972), additional analysis was conducted as confirmation.

For question codes CLPRESENT, CARGOAL, SKIPCLAS, PAYWORK, ANALYZE, SYNTHESZ, PERFORM, and IMPCACOU, there is evidence that there are differences in the means across campuses/centers. We can reject the null hypothesis that the difference in the means of the survey questions is equal to 0; and we can conclude with a 95% confidence that the differences in survey response across campuses/centers are not solely due to chance.

Question Code	Charlotte	Collier	Hendry/ Glades	Thomas Edison (Lee)	F (F$_{crit}$=2.61)	p-value
CLPRESEN	2.23	2.37	2.49	2.21	3.08	0.027*
REWROPAP	2.55	2.69	2.67	2.57	1.32	0.268
INTEGRAT	2.92	3.01	2.87	2.96	0.622	0.600
CLUNPREP	1.84	1.89	1.83	1.90	0.339	0.797
INTERNET	3.22	3.10	3.06	3.21	1.15	0.327
FACIDEAS	1.91	1.82	1.72	1.82	0.890	0.446
FACFEED	2.71	2.77	2.58	2.76	0.759	0.517
EXAMS	5.01	4.84	5.12	5.00	0.478	0.698
ENVCOMP	3.24	3.27	3.14	3.30	0.953	0.414
GNGENLED	2.91	3.01	3.00	2.98	0.599	0.615
GNWORK	2.39	2.48	2.46	2.43	0.302	0.823
GNANALY	2.94	3.10	3.08	2.98	1.90	0.127
GNDIVERS	2.38	2.58	2.50	2.46	1.69	0.168
CARGOAL	2.45	2.71	2.92	2.65	3.78	0.010*
GAINCAR	2.40	2.52	2.80	2.55	1.64	0.178
WORKHARD	2.66	2.68	2.66	2.63	0.410	0.746
SKIPCLAS	1.55	1.49	1.45	1.64	4.37	0.005
PAYWORK	3.26	3.31	2.55	3.03	3.35	0.018
MEMORIZE	2.83	2.96	3.00	2.91	0.992	0.396
ANALYZE	2.90	3.08	2.66	2.99	4.36	0.005
SYNTHESZ	2.82	2.99	2.68	2.85	3.08	0.027*
EVALUATE	2.76	2.80	2.55	2.74	1.12	0.340
APPLYING	2.77	2.84	2.64	2.77	0.540	0.655
PERFORM	2.74	2.95	2.75	2.88	2.64	0.048*
ENVSCHOL	3.14	3.09	3.22	3.09	0.480	0.696
ENVSUPRT	2.96	2.93	2.98	2.93	0.319	0.812
ENVFAC	5.44	5.52	5.58	5.46	0.287	0.834
IMPACAD	2.59	2.60	2.70	2.59	1.31	0.270
IMPCACOU	2.22	2.32	2.48	2.21	2.93	0.033*
IMPJOBPL	2.02	2.05	2.16	2.06	1.06	0.365
WRKFULL	2.06	2.16	2.00	2.04	0.921	0.430
CAREDEP	1.82	1.90	1.85	1.73	2.00	0.112
ACADUNP	1.68	1.70	1.77	1.66	0.413	0.743

*Table 2. One-way ANOVA significance tests for survey questions across all four campuses/centers. Shaded cells indicate statistically significant differences in the mean at the 95% confidence level. *Denote marginal significance as defined by Johnson (2013).*

Confidence intervals were calculated for each survey question by campus/center and are provided in Figures 1, 3, 4, 6, 9, 13, and 15 in support of significance testing. The y-axis is labeled by increments of one corresponding with a survey choice such as 'not likely' or 'somewhat'. Refer to Table 1 for details with regard to each question. Recall that the means have no interpretable value and are of no interpretable significance. They are calculated here and evaluated as a method for studying distribution of results in conjunction with significance testing.

Additionally, where survey questions exhibited statistically significant differences across the campuses/centers, survey response distribution is presented (Figures 2, 5, 7, 8, 10, 11, 12, and 14). The one-way ANOVA, when evaluated in conjunction with the boxplots and distribution graphs, should provide supporting evidence for a meaningful statistically significant result.
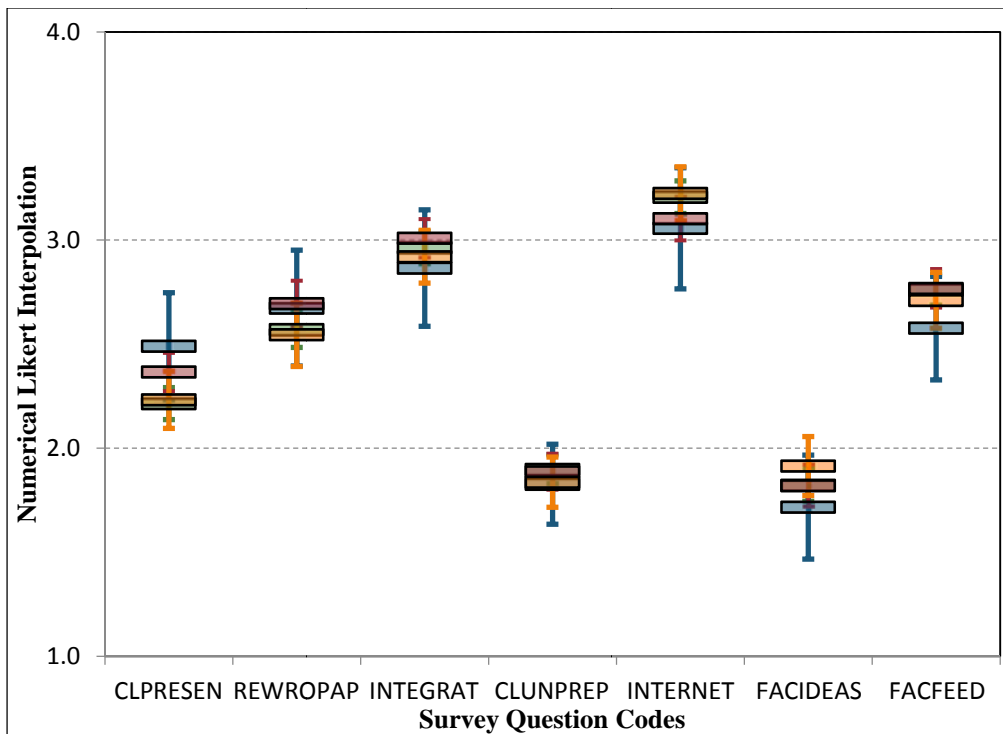
Figure 1. Boxplot of mean survey responses with confidence intervals for Course Assignment questions. Orange: Charlotte, Red: Collier, Blue: Hendry/Glades, Green: Thomas Edison (Lee).

Survey question CLPRESEN exhibited statistically significant results in the one-way ANOVA (Figure 1, Table 2). When plotted against other campuses/centers with confidence intervals, the Hendry/Glades Center survey response exhibited the highest mean and, if significance testing holds, is most likely different from the Charlotte or Thomas Edison (Lee) campuses, which both recorded mean scores of 0.16 and 0.18 lower than Hendry/Glades, respectively. According to Johnson (2013), a 17-25% chance exists that the marginally significant results depicted in Table 2 may be false positives (i.e. Type I errors). The survey question coded CLPRESEN falls into this category of a marginal result which is defined as those within the 95-99% confidence level, or p-value of 0.05 to 0.01.

For a clearer picture of the disagreement between campuses/centers on question code CLPRESEN (Question: …about how often have you made a class presentation?), survey response distribution is presented in Figure 2. Survey responses from the Hendry/Glades center exhibited a higher distribution mean than the other campuses as seen from the box plot (Figure 1) and supported by the one-way ANOVA (see Table 2). This difference in the means for Hendry/Glades is exhibited by the survey response mode centered on 'Often' where other campuses 'Sometimes'. In other words, Hendry/Glades report making presentations more frequently than Thomas Edison (Lee) and/or Charlotte campuses, and the difference is statistically significant.
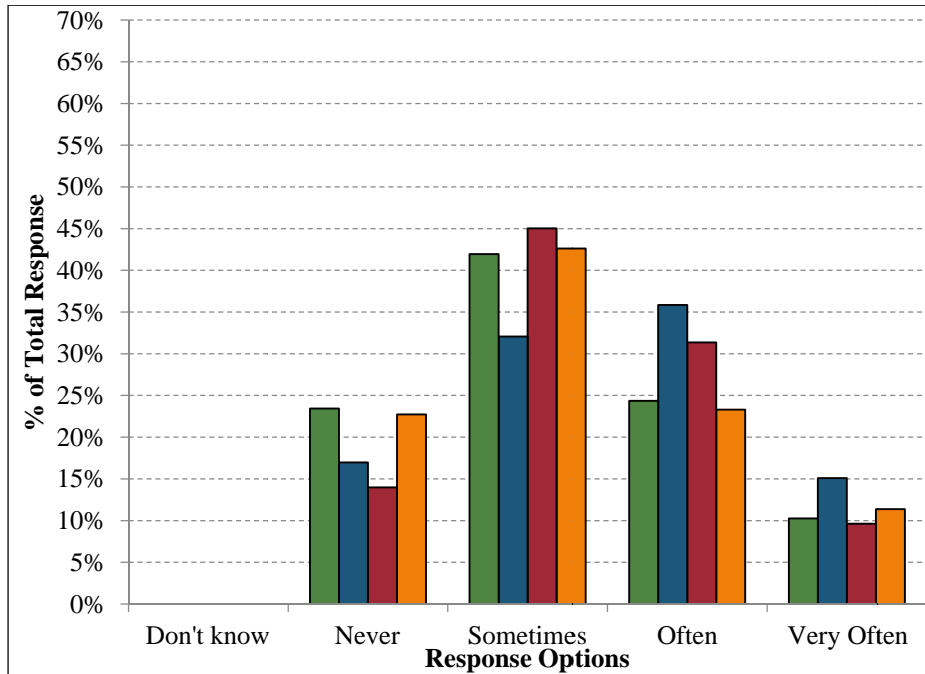
Figure 2. Survey responses for question code CLPRESEN across Charlotte (orange), Collier (red), Hendry/Glades (blue), and Thomas Edison (Lee) (green).
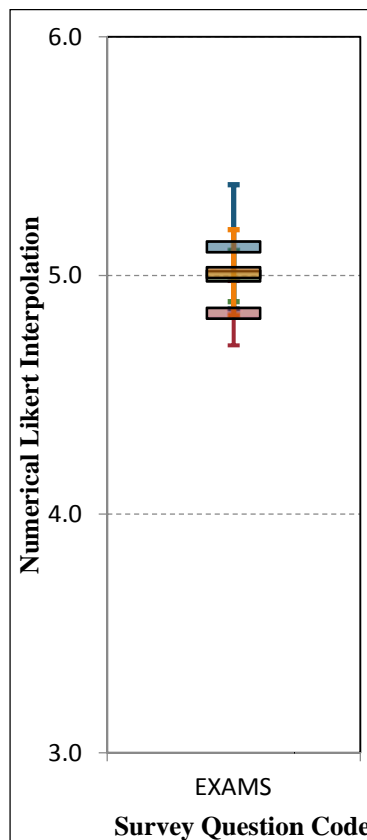

Figure 3. Boxplot of mean survey responses with confidence intervals for Course Assignment question EXAMS. Orange: Charlotte, Red: Collier, Blue: Hendry/Glades, Green: Thomas Edison (Lee).
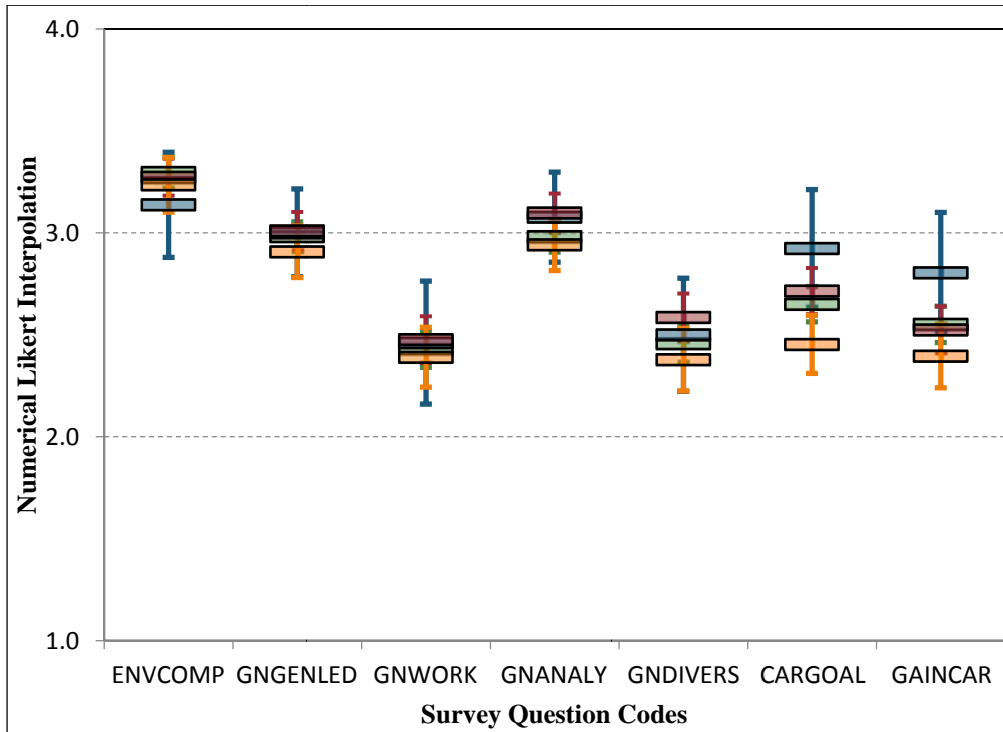
Figure 4. Boxplot of mean survey responses with confidence intervals for Course Assignment questions. Orange: Charlotte, Red: Collier, Blue: Hendry/Glades, Green: Thomas Edison (Lee).

Survey question CARGOAL exhibited statistically significant results in the one-way ANOVA (Figure 4, Table 2). When plotted against other campuses/centers with confidence intervals, the Charlotte campus survey response exhibited the lowest mean and, if significance testing holds, is possibly different from all other campuses and centers. And again, a 17-25% chance exists that the marginally significant results depicted in Table 2 may be false positives (i.e. Type I errors) (Johnson, 2013). The survey question coded CARGOAL falls into this category of a marginal result which is defined as those within the 95-99% confidence level, or p-value of 0.05 to 0.01.

The statistically significant difference in means between campuses/centers on question code CARGOAL (Question: How much has your experience… …contributed to your knowledge, skills, and personal development in developing clearer career goals?), survey response distribution is presented in Figure 4. This difference in the means for the Charlotte campus is exhibited by the survey response skewness that is more positive than the other campuses/centers and is evidenced by a low response rate of 'Very much' compared with other campuses/centers (Figure 5). In other words, Charlotte respondents report that their experiences at FSW contribute to their career goals at a lower rate than other campuses/centers. Moreover, this difference in means is statistically significant.
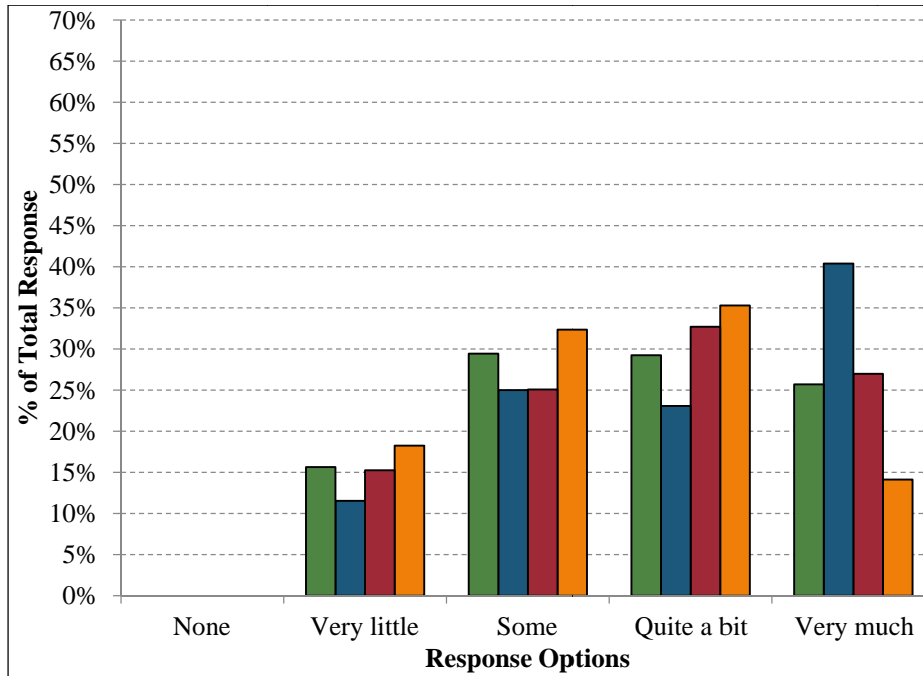
Figure 5. Survey responses for question code CARGOAL across Charlotte (orange), Collier (red), Hendry/Glades (blue), and Thomas Edison (Lee) (green).
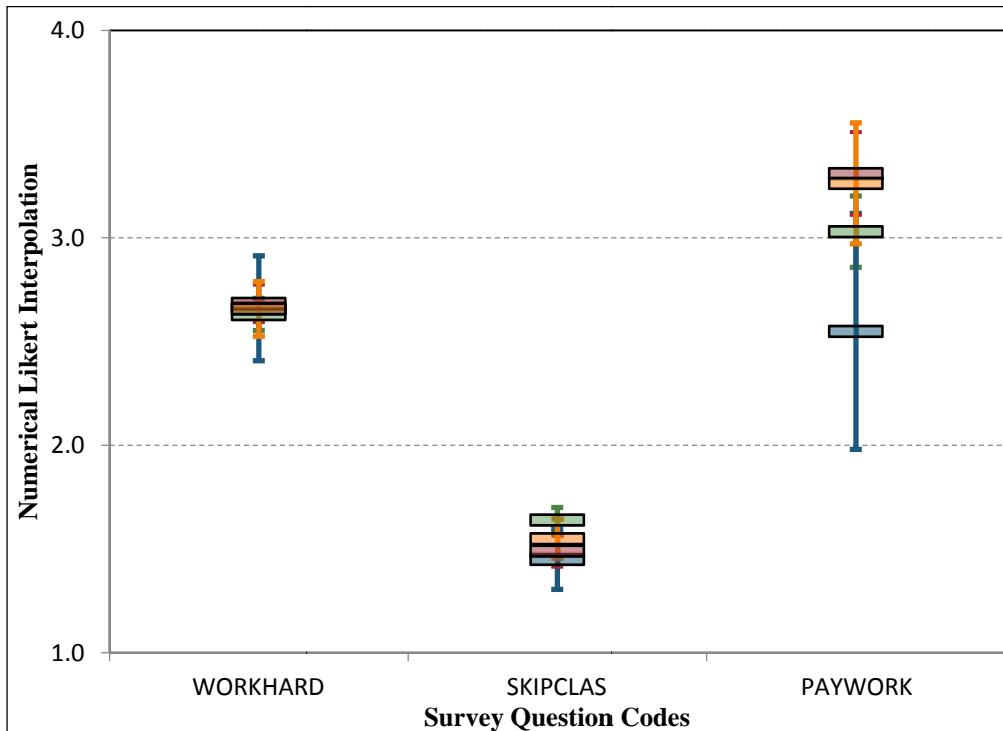

Figure 6. Boxplot of mean survey responses with confidence intervals for Class Behavior questions. Orange: Charlotte, Red: Collier, Blue: Hendry/Glades, Green: Thomas Edison (Lee).

Survey question SKIPCLAS exhibited statistically significant results in the one-way ANOVA (Figure 6, Table 2). When plotted against other campuses/centers with confidence intervals, the Thomas Edison

(Lee) campus survey response exhibited the highest mean and, if significance testing holds, is most likely different from the other campuses/centers.

The statistically significant difference in means between campuses/centers on question code SKIPCLAS (Question: …about how often have you skipped class?), survey response distribution is presented in Figure 7. This difference in the means for Thomas Edison (Lee) is apparent when binning 'Often' and 'Very often' response categories together. In this case, 8.4% of respondents from Thomas Edison (Lee) are included in this bin. By comparison, only 1.9% of respondents from the Hendry/Glades center are included in this bin (Figure 7). In other words, Thomas Edison (Lee) respondents report a likelihood to skip class at a lower rate than other campuses/centers. Moreover, this difference in means is statistically significant.
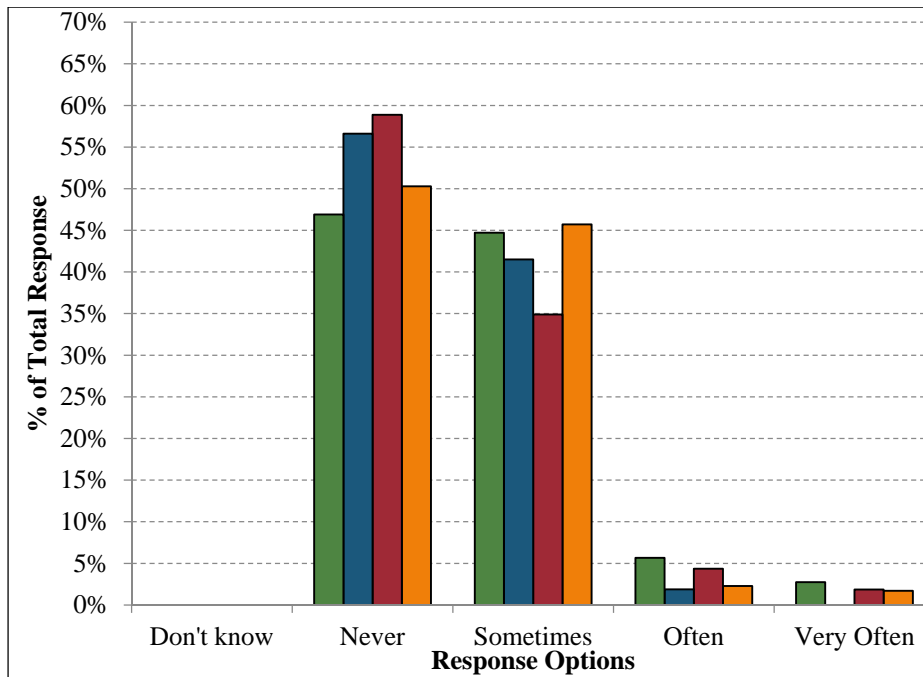

Figure 7. Survey responses for question code SKIPCLAS across Charlotte (orange), Collier (red), Hendry/Glades (blue), and Thomas Edison (Lee) (green).

Survey question PAYWORK exhibited statistically significant results in the one-way ANOVA (Figure 6, Table 2). When plotted against other campuses/centers with confidence intervals, the Hendry/Glades Center and Thomas Edison (Lee) survey response exhibited lower mean scores and, if significance testing holds, is most likely different from Charlotte and Collier campuses as well as each other.
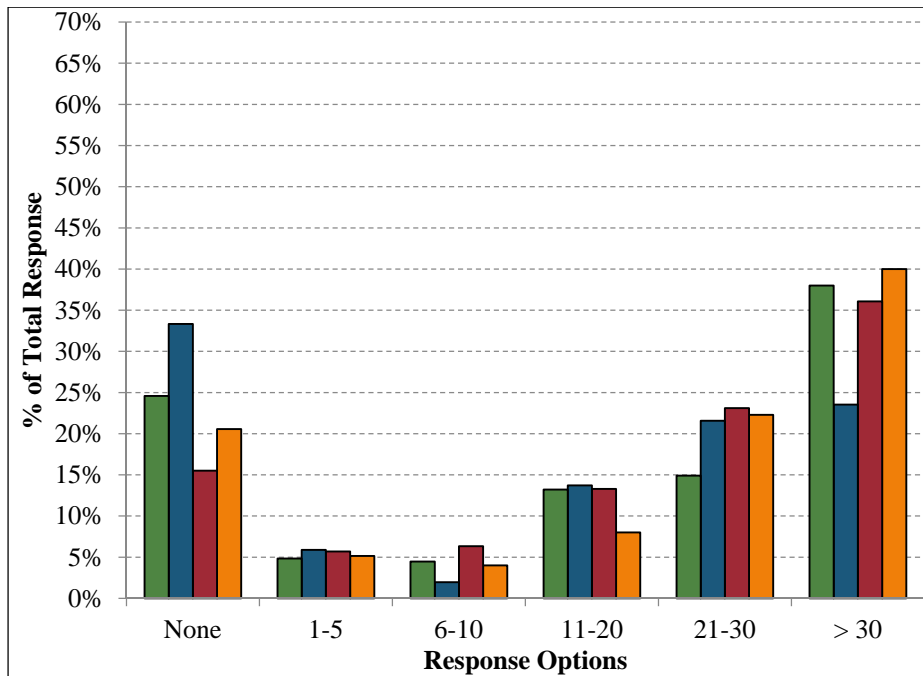
Figure 8. Survey responses for question code PAYWORK across Charlotte (orange), Collier (red), Hendry/Glades (blue), and Thomas Edison (Lee) (green).

The statistically significant difference in means between campuses/centers on question code PAYWORK (Question: About how many hours do you spend in a typical 7-day week working for pay?), survey response distribution is presented in Figure 8. This difference in the means for Hendry/Glades is apparent in the 'Never' response category. In this case, 33.3% of respondents from Hendry/Glades are included in this bin. By comparison, only 20.6% of respondents from Charlotte campus and 15.5% of respondents from Collier campus are included in this bin (Figure 8). In other words, the Thomas Edison (Lee) and Hendry/Glades respondents report working fewer hours per week for pay than other campus counterparts. Moreover, this difference in means is statistically significant.

Survey question ANALYZE exhibited statistically significant results in the one-way ANOVA (Figure 9, Table 2). Survey responses from each campus/center exhibited confidence intervals with very little overlap. No more than one other campus is included in any confidence interval for any campus/center. In other words, all campuses/centers may exhibit significantly different results from each other or just one other campus/center. The statistically significant difference in means between campuses/centers on question code ANALYZE (Question: …how much has your coursework at this college emphasized analyzing the basic elements of an idea, experience, or theory?), survey response distribution is presented in Figure 10 (see van Gaalen, 2014 for exact survey question phrasing).
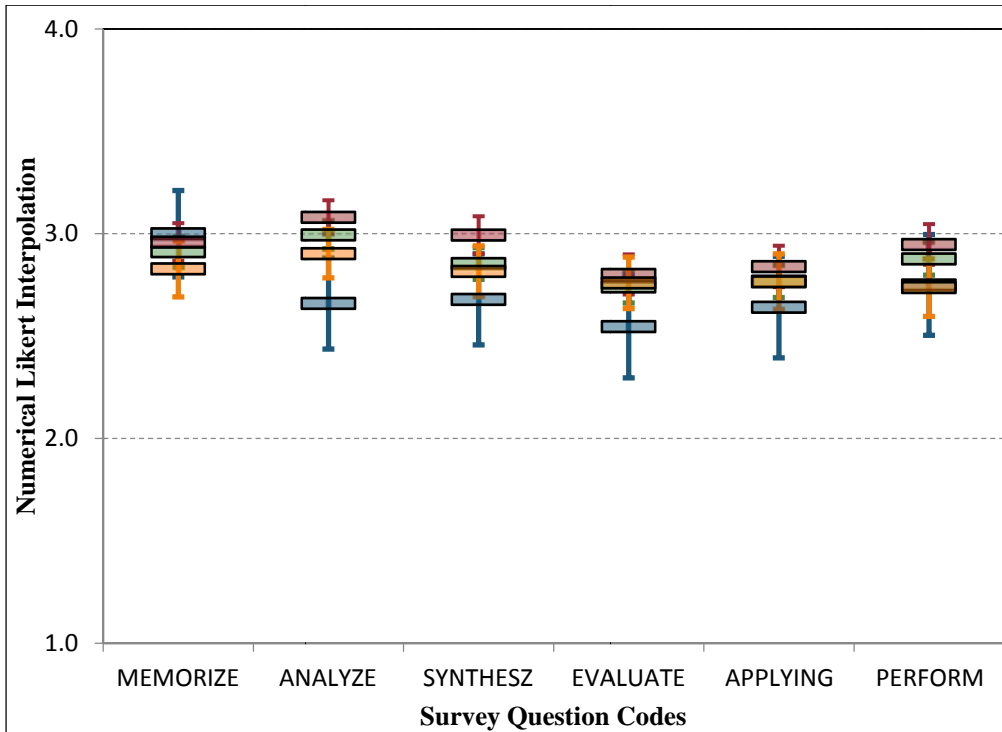
Figure 9. Boxplot of mean survey responses with confidence intervals for Learning Techniques questions. Orange: Charlotte, Red: Collier, Blue: Hendry/Glades, Green: Thomas Edison (Lee).
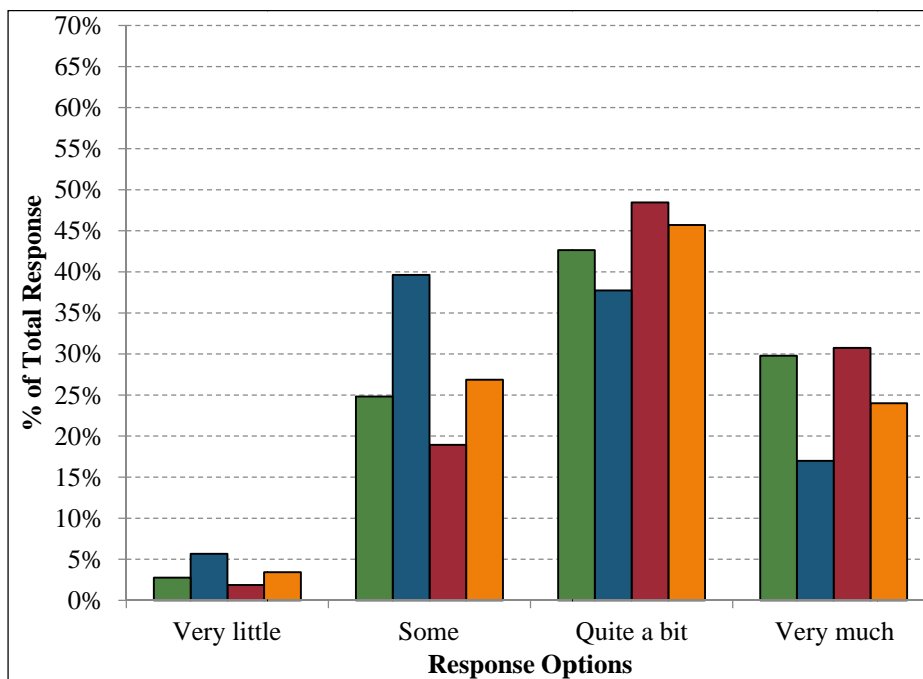

Figure 10. Survey responses for question code ANALYZE across Charlotte (orange), Collier (red), Hendry/Glades (blue), and Thomas Edison (Lee) (green).

Survey question SYNTHESZ exhibited statistically significant results in the one-way ANOVA (Figure 9, Table 2). And again, a 17-25% chance exists that the marginally significant results depicted in Table 2

may be false positives (i.e. Type I errors) (Johnson, 2013). The survey question coded SYNTHESZ falls into this category of a marginal result which is defined as those within the 95-99% confidence level, or p-value of 0.05 to 0.01.

Survey responses from each campus/center exhibited confidence intervals with very little overlap. No more than one other campus is included in any confidence interval for any campus/center. In other words, all campuses/centers may exhibit significantly different results from each other or just one other campus/center. The statistically significant difference in means between campuses/centers on question code SYNTHESZ (Question: …how much has your coursework at this college emphasized synthesizing and organizing ideas…?), survey response distribution is presented in Figure 11.
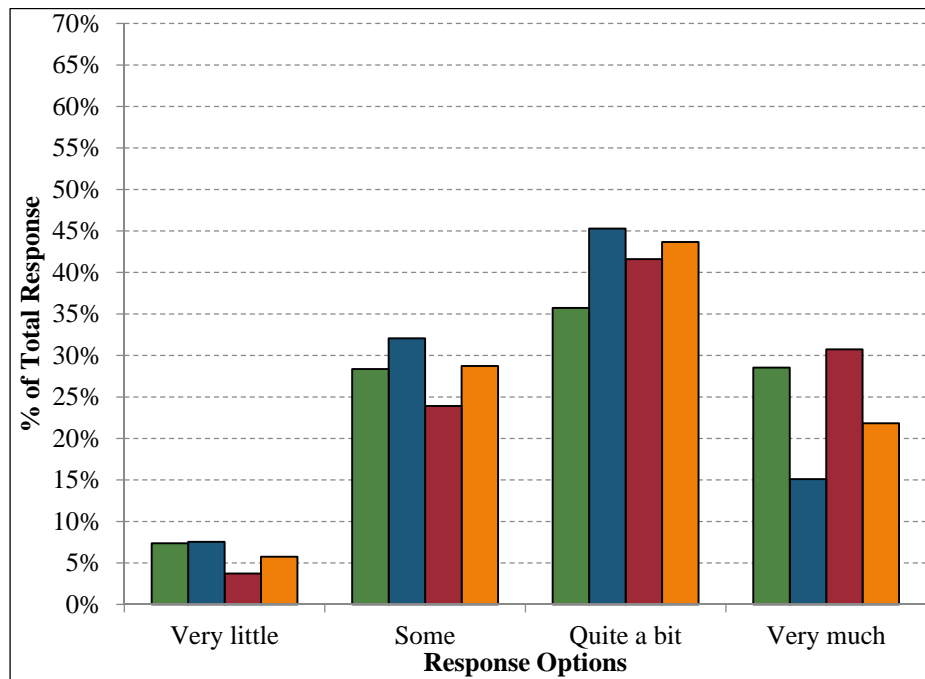

Figure 11. Survey responses for question code SYNTHESZ across Charlotte (orange), Collier (red), Hendry/Glades (blue), and Thomas Edison (Lee) (green).

Survey question PERFORM exhibited statistically significant results in the one-way ANOVA (Figure 9, Table 2). And again, a 17-25% chance exists that the marginally significant results depicted in Table 2 may be false positives (i.e. Type I errors) (Johnson, 2013). The survey question coded PERFORM falls into this category of a marginal result which is defined as those within the 95-99% confidence level, or p-value of 0.05 to 0.01.

Survey responses from each campus/center exhibited confidence intervals with very little overlap. Only Hendry/Glades exhibited confidence intervals encompasses all other campuses. None of the three campuses exhibited confidence intervals encompassing more than one other campus. In other words, all campuses/centers may exhibit significantly different results from each other with the exception of Hendry/Glades, which may not be significantly different.

The statistically significant difference in means between campuses/centers on question code PERFORM (Question: …how much has your coursework at this college emphasized having students use information

they have read or heard to perform a new skill?), survey response distribution is presented in Figure 12 (see van Gaalen, 2014 for exact survey question phrasing).
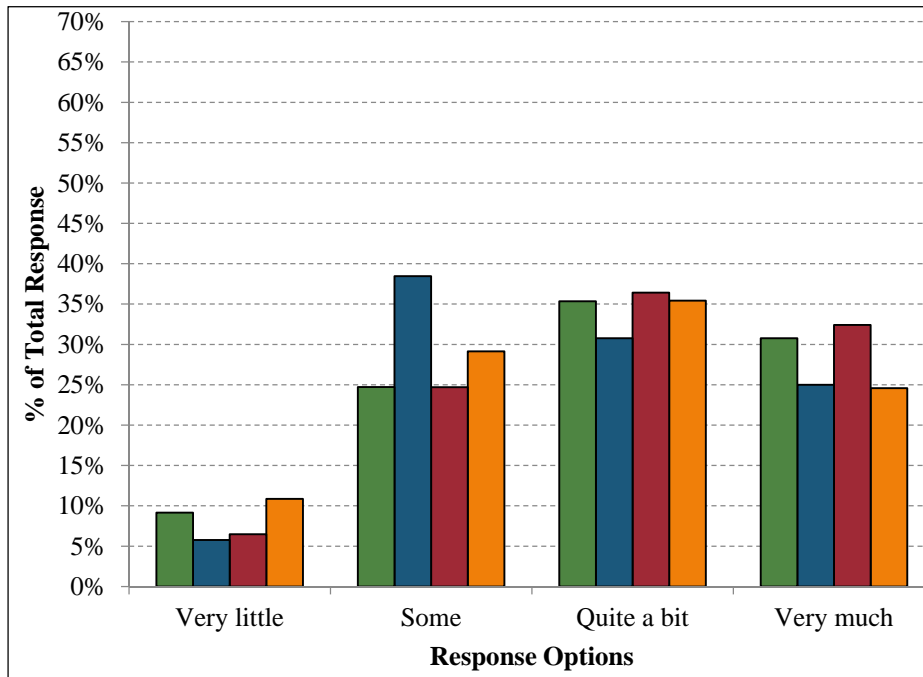

Figure 12. Survey responses for question code PERFORM across Charlotte (orange), Collier (red), Hendry/Glades (blue), and Thomas Edison (Lee) (green).

Survey question IMPCACOU exhibited statistically significant results in the one-way ANOVA (Figure 13, Table 2). When plotted against other campuses/centers with confidence intervals, the Hendry/Glades Center survey response exhibited the highest mean and, if significance testing holds, is most likely different from the Charlotte or Thomas Edison (Lee) campuses, which both recorded mean scores of 0.26 and 0.27 lower than Hendry/Glades, respectively. According to Johnson (2013), a 17-25% chance exists that the marginally significant results depicted in Table 2 may be false positives (i.e. Type I errors). The survey question coded CLPRESEN falls into this category of a marginal result which is defined as those within the 95-99% confidence level, or p-value of 0.05 to 0.01.

For a clearer picture of the disagreement between campuses/centers on question code IMPCACOU (Question: How important is career counseling to you at this college?), survey response distribution is presented in Figure 14. The difference in the means for Hendry/Glades is exhibited by a more negatively skewed survey response, with as much as 17% more responses of 'Very' compared with other campuses. In other words, Hendry/Glades respondents report feeling more strongly about the helpfulness of career counseling than Thomas Edison (Lee) and/or Charlotte campuses, and the difference is statistically significant.
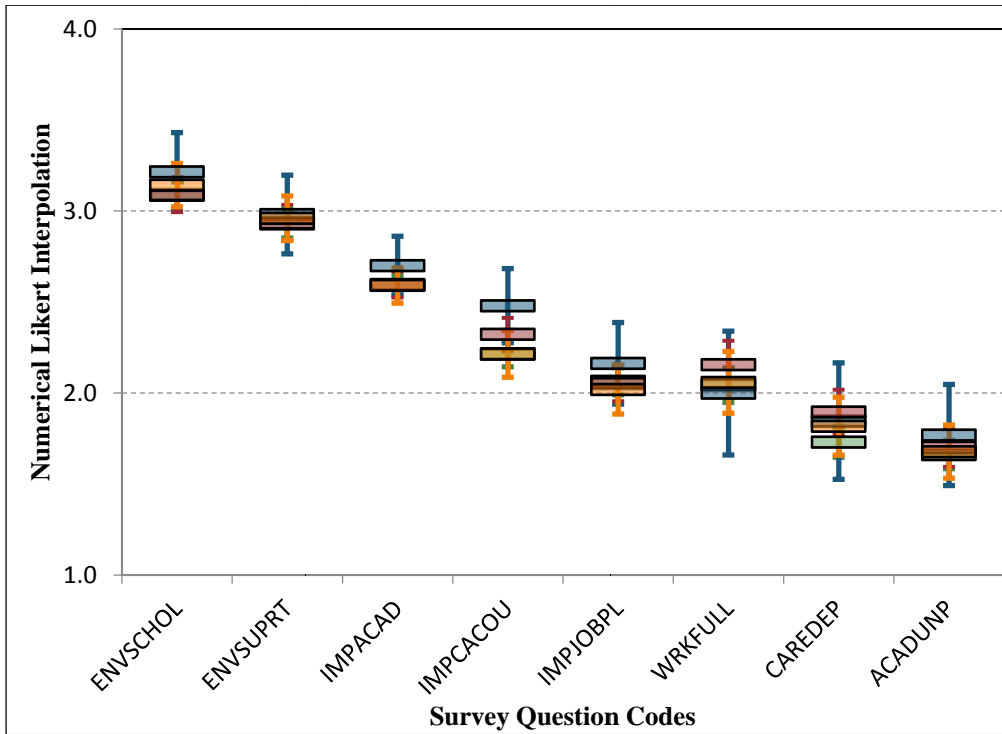
Figure 13. Boxplot of mean survey responses with confidence intervals for Academic Support and Retention questions. Orange: Charlotte, Red: Collier, Blue: Hendry/Glades, Green: Thomas Edison (Lee).
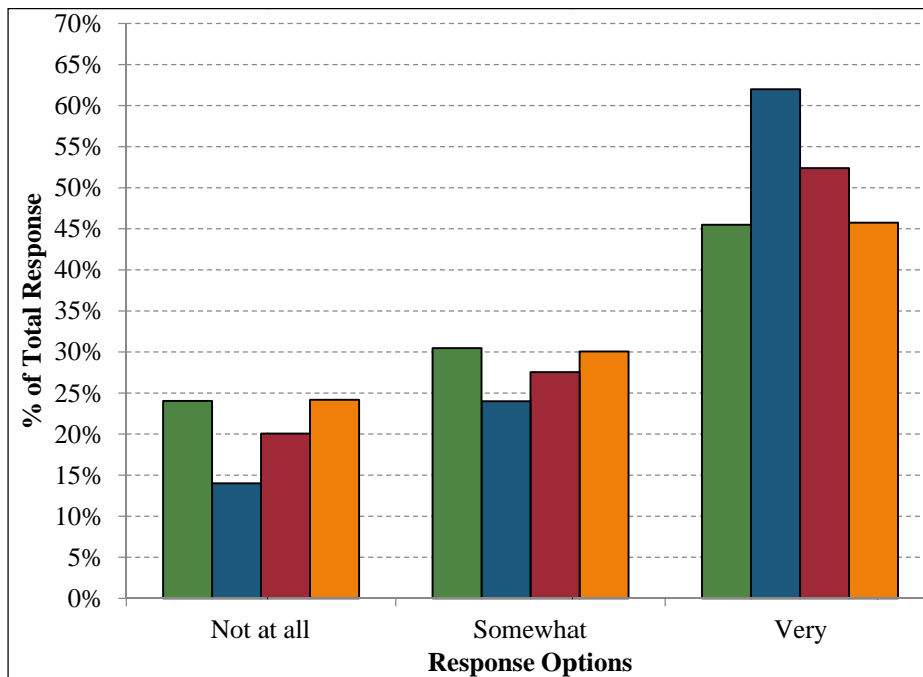

Figure 14. Survey responses for question code IMPCACOU across Charlotte (orange), Collier (red), Hendry/Glades (blue), and Thomas Edison (Lee) (green).
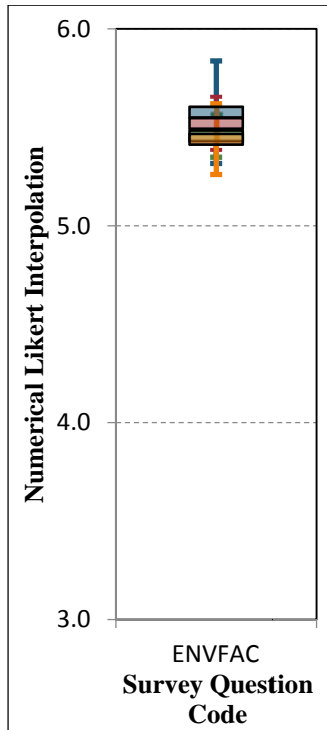
Figure 15. Boxplot of mean survey responses with confidence intervals for Academic Support. Orange: Charlotte, Red: Collier, Blue: Hendry/Glades, Green: Thomas Edison (Lee).

3   CONCLUSIONS

Florida SouthWestern State College's (FSW) Academic Assessment CCSSE/CCFSSE report focused on the comparison of the Community College Survey of Student Engagement and the Community College Faculty Survey of Student Engagement (van Gaalen, 2014). In that report, a study of survey responses to 33 common questions spanning four topically defined categories, Course Assignments, Class Behavior, Learning Techniques, Academic Support, and Retention, was conducted. A review of the results by faculty at FSW called for a follow-up report focusing on student engagement survey responses (CCSSE) by campus. Each survey question in the initial report is compared across the three campuses of Charlotte, Collier, and Thomas Edison (Lee), and the one center (Hendry/Glades).

In Spring 2014, entry level courses were randomly sampled to participate in the survey accounting for 7.1% of all course sections offered during the semester. In all, 86 sections across the three campuses and one center of FSW were administered with Charlotte conducting surveys in 14 sections, Collier with 23 sections, Hendry/Glades Center with 5 sections, and Thomas Edison (Lee) with 44.

The difference in means of survey responses across sites was analyzed. The differences were tested for significance using a one-way analysis of variance (one-way ANOVA) accounting for special circumstances associated with Likert-type ratings (Siegel, 1956; Jamieson, 2004; Howell, 2009; Sullivan, 2014). Results exhibited eight of 33 survey questions (question codes CLPRESENT, CARGOAL, SKIPCLAS, PAYWORK, ANALYZE, SYNTHESZ, PERFORM, and IMPCACOU) were statistically significant, however, unequal sample sizes meant additional studies were required. As such, confidence intervals and distribution plots were analyzed.

For survey question CLPRESEN, the Hendry/Glades Center survey response exhibited the highest mean of all sites. Hendry/Glades exhibited a survey response mode centered on 'Often' where other campuses were centered on 'Sometimes'. In other words, Hendry/Glades respondents report making presentations more frequently than Thomas Edison (Lee) and/or Charlotte campuses, and the difference is statistically significant.

For survey question CARGOAL, the Charlotte campus survey response exhibited the lowest mean of all sites. Charlotte campus exhibited a more positive skewness than other sites evidenced by a low response rate of 'Very much'. In other words, Charlotte respondents report that their experiences at FSW contribute to their career goals at a lower rate than other campuses/centers tend to feel their experiences at FSW does not contribute to their career goals.

For survey question SKIPCLAS, the Thomas Edison (Lee) campus survey response exhibited the highest mean of all sites. The Thomas Edison (Lee) campus exhibited a more negative skewness than other sites evidenced by a high response rate for 'Often' and 'Very often' response categories. In other words, Thomas Edison (Lee) respondents report a likelihood to skip class at a lower rate than other campuses/centers to skip class.

For survey question PAYWORK, the Hendry/Glades Center and Thomas Edison (Lee) campus survey responses exhibited significantly lower mean scores than both Charlotte and Collier campuses. Both Hendry/Glades Center and Thomas Edison (Lee) campus exhibited a more positive skewness evidenced by a high response rate for 'Never'. In other words, the Thomas Edison (Lee) and Hendry/Glades respondents report working fewer hours per week for pay than other campus counterparts.

For survey question ANALYZE and SYNTHESZ, responses exhibited confidence intervals with very little overlap across campuses. In other words, it is possible all campuses/centers may exhibit significantly different results from each other or just one other campus/center.

For survey question PERFORM, only the Hendry/Glades Center exhibited confidence intervals encompasses all other campuses. None of the three campuses exhibited confidence intervals encompassing more than one other campus. In other words, all campuses/centers may exhibit significantly different results from each other with the exception of Hendry/Glades, which may not be significantly different.

For survey question IMPCACOU, the Hendry/Glades Center survey response exhibited the highest mean of all sites. The difference in the means for Hendry/Glades is exhibited by a more negatively skewed survey response, with as much as 17% more responses of 'Very' compared with other campuses. In other words, Hendry/Glades respondents report feeling more strongly about the helpfulness of career counseling than Thomas Edison (Lee) and/or Charlotte campuses.

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